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Stottlemyer

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(54) **WATER COLUMN SOUND SPEED PROFILING SYSTEM**

(75) Inventor: **Thomas R. Stottlemyer**, Mystic, CT (US)

(73) Assignee: **The United States of America as represented by the Secretary of the Navy**, Washington, DC (US)

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Primary Examiner—Daniel T. Pihulic
(74) *Attorney, Agent, or Firm*—James M. Kasischke; Michael J. McGowan; Michael F. Oglo

(57) **ABSTRACT**

A system and method for determining a sound speed profile of a water column. A free falling sound source is deployed in the water at a known location and time. The sound source transmits acoustic pulses omnidirectionally therefrom at predetermined times after deployment. An acoustic receiver located at a known location detects each acoustic pulse. The time differential between each predetermined time and a time of arrival for each subsequent acoustic pulse is determined. Speed of sound for each portion of the water column is then determined as a function of the time differential, the known locations of sound source deployment and the acoustic receiver, and the known rate of descent of the sound source. The sound source can be constructed from a hydrodynamic body housing a power source, timing electronics, and spark gap electrodes. A bubble, generated by the spark gap electrodes, implodes to create the acoustic pulse.

18 Claims, 2 Drawing Sheets